1508, **1509** are defined that separate each of the left, right, top and bottom portions of the region of interest **103**, overlapping in the corner regions as illustrated in **FIG. 13B**. Planes of the second type are labeled as **1510**, **1511**, **1512**, **1513**. Each pair of first and second planes is processed independently. This combination of planes emulates the four directional cursor keys, where a hand in a corner triggers two keys, commonly interpreted by many applications as the four secondary 45 degree (diagonal) directions. Emulating the keyboard cursor in this method allows a variety of existing applications to be controlled by system **100**, including, for example, Microsoft® PowerPoint® which responds to the emulated cursor keys (e.g. the up and down arrow keys) by advancing to the next or previous slide in a presentation sequence.

[0129] Another method of emulating control of discreet directions applies for applications that expect the four **45** degree direction states to be explicitly represented. Boxes **1514**, **1515**, **1516**, **1517** are defined for each of the four primary (horizontal and vertical) directions, with additional boxes **1518**, **1519**, **1520**, **1521** defined for each of the secondary 45 degree (diagonal) directions as illustrated **FIG. 13C**. For clarity, only boxes of the first type are illustrated. A gap is placed between these boxes. **FIG. 13D** illustrates how neighboring boxes are defined. The gap between boxes of the first type **1522**, **1523** assures that the user intentionally causes the object of interest **105** to enter the box, while the gap **1524** is filled by overlapping boxes of the second type **1525**, **1526**, so that the system will report the previous gesture until the user was clearly intended to move the object of interest **105** into either a neighboring box or the central neutral region. This combination of buttons can be used to emulate an eight-directional joystick pad.

[0130] A wider class of gestures depend on motion instead of or in addition to position. An example is the gesture of "swiping the hand to the left." This is a one gesture to convey to an application that it is to return to a previous page or state. Through emulation of a keyboard and mouse, this gesture may be used to control information presentation software, in particular Microsoft® PowerPoint®, to go to the previous slide of a presentation sequence. Through emulation of a keyboard and mouse, this gesture causes a web browser to perform the action associated with its "back" button. Similarly, the gesture of "swiping the hand to the right" is one gesture to convey to an application that the user desires to go to the next page or state. For example, this gesture causes presentation software to go to the next slide of a presentation sequence, and causes browser software to go to the next page.

[0131] One method for detecting "swiping the hand to the left" is as follows. A thin stripe along the leftmost part of the region of interest **103** is defined as the left-edge region. The position (for example the position defined by block **314**, or alternately by the remapped coordinates from remapping process **317**) of the object of interest **105** is represented as the following three states:

[0132] 1. Object of interest is present and not inside the left-edge region

[0133] 2. Object of interest is present and inside the left-edge region

[0134] 3. Object of interest is not present within the hand detection region.

[0135] A transition from state **1** to state **2** above causes the gesture detection module **315** to enter a state whereby it starts a timer and waits for the next transition. If a transition to state **3** is observed within a predetermined duration of time, the "swiping the hand off to the left" gesture is reported to have occurred. This technique is typically duplicated for the right, upper, and lower edges, and, because the hand position is found in three dimensions, also duplicated to detect "pulling the hand back."

[0136] A variety of gesture detection techniques have been discussed. Still other gesture detection techniques (for example, Hidden Markov Layers) are described in research literature, and may be applied in the various implementations of the system **100** described herein.

[0137] Referring back to **FIGS. 1 and 3**, another implementation of the multicamera control system **100** is described in further detail. While **FIG. 1** shows a two camera system, it should be understood that the image processor **106** can be configured to receive input from more than two cameras, and may for particular applications include four (4) or more video cameras. In the four camera implementation, components **304-311** of **FIG. 3** are duplicated to support the two additional cameras. Additionally, the combination module **312** is configured to receive four sets of camera-relative presence and position data (similar to data **310** and **311**) associated with the object of interest **105** being tracked. The techniques and equations (in particular, Eq. 5 and Eq. 6) previously described can be applied to the additional pair(s) of cameras, where the output of the combination module **312** is the average of all the position from each of the camera pairs. The gesture detection module **315** is similarly reconfigured to receive four sets of cameral-relative presence and position data **310**, **311** from the two additional detection modules (similar to **308**, **309**) which are substantially similar to detection modules **310** and **311**.

[0138] The output from the image processor **106**, which now includes processed object position coordinates and gesture information associated with four cameras, can be used by another process or user application program **316**. The formulas and geometry (described above) used to calculate coordinate information associated with the object of interest **105** from the two additional cameras are also used.

[0139] In one implementation using four cameras, the two additional cameras are positioned at the bottom two corners within the controlled background **104** and are oriented such that the region of interest **103** is within the field of view **205** of each camera. The advantage of a four camera system is that the position of the object of interest **105** can be tracked with greater accuracy. Thus, the application program may include more screen objects with increased density on the video display **107** because the increased tracking accuracy allows objects that are close in proximity to be correctly selected by small movements with the object of interest **105**. Moreover, the two additional cameras reduce errors in tracking the object of interest **105** when a portion of the object of interest **105** is occluded within the field of view **205** associated with one or more of the other cameras.

[0140] While a number of implementations have been described, it will be understood that various modifications may be made. Accordingly, other implementations are within the scope of the following claims.